

# **Report on International Telecommunications Markets 1999 Update**

**Prepared for Senator Ernest F. Hollings  
Committee on Commerce, Science, and Transportation  
United States Senate**

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**FCC Report on International Telecommunications  
1999 Update**

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## **Introduction**

This report updates the data provided by the Federal Communications Commission in the 1998 “Report on International Telecommunications Markets.” As the information below indicates, international calling prices have continued to decline significantly over the last year; countries are continuing to open their markets to competition by foreign telecommunications and satellite companies; and a number of other developments are working to lower prices and increase international calling volumes. These developments are in large measure attributable to the 1997 WTO Basic Telecom Agreement. In addition to the WTO Agreement, Commission policies such as settlement rate reform have played an important part, along with other political and economic forces over which the Commission has no control.

### **I. International Wireline Telecommunications Services**

#### **A. Declines in International Pricing**

##### **1. Introduction**

Less than two years into the Commission’s implementation of the WTO Basic Agreement on Telecommunications and the August 1997 Benchmarks Order, we have already started to see dramatic results. These policies have increased liberalization, privatization and competition, which have led to significantly lower international accounting rates, which in turn have resulted in lower international calling rates. In 1996, the year just prior to the Benchmarks Order and the WTO Agreement, the average price of an international long distance call originating from the United States was 74 cents per minute. By 1998, it fell 25% to 55 cents/minute on average. Aggregate data for 1999 are not yet available, but all indications are that the trend toward lower rates has continued. By the time the Benchmarks Order is fully implemented in 2003, we expect to see much deeper reductions in international calling rates. Prices on competitive routes have fallen even more dramatically. For example, rates on the U.S.-UK route are as low as 10 cents per minute.

##### **2. International Pricing Declines for Five of the Largest Routes**

The following table details the three largest U.S. carriers’ discount rates available to residential subscribers from 1997 through 1999 on five of the largest international traffic routes by volume of minutes. Rate changes on these routes are typical of rate changes on international routes generally. The table indicates that, with a few exceptions, the rates charged by all three carriers have declined. In 1999, carriers offered customers several plans with differing flat monthly fees. For 1999, we have included the plan with the least change from 1998 in the flat monthly fee. Some plans with higher flat monthly fees have lower per minute rates.<sup>1</sup>

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<sup>1</sup> Note: These data represent a minor change from what was provided in last year’s report. Last year the data showed the best rate available from the major carriers 24 hours a day, and the current report, in some cases, shows ranges which reflect the difference between rates during peak and off-peak times.

## AT&T

	Nov-97	Nov-98	Dec-99
Canada	\$0.05 - \$0.12	\$0.05 - \$0.10	\$0.05 - \$0.10
Mexico	\$0.49	\$0.44	\$0.35
Germany	\$0.35	\$0.25 - \$0.29	\$0.17
Japan	\$0.47	\$0.30	\$0.16
India	\$0.80	\$0.75	\$0.55
Monthly Fee*	\$3.00	\$3.00 - \$5.95	\$5.95

## MCI WorldCom

	Nov-97	Nov-98	Dec-99
Canada	\$0.12	\$0.05 - \$0.12	\$0.05 - \$0.07
Mexico	\$0.61	\$0.44	\$0.42
Germany	\$0.35	\$0.29	\$0.09 - \$0.17
Japan	\$0.48	\$0.35	\$0.35
India	\$0.80	\$0.80	\$1.22 <sup>2</sup>
Monthly Fee*	\$3.00	\$3.00	\$4.95

## Sprint

	Nov-97	Nov-98	Dec-99
Canada	\$0.10 - \$0.25	\$0.10	\$0.10
Mexico	\$0.55 - \$0.75	\$0.47	\$0.63
Germany	\$0.30 - \$0.70	\$0.27	\$0.25
Japan	\$0.43 - \$0.87	\$0.46	\$0.39
India	\$1.05 - \$1.40	\$0.78	\$0.72
Monthly Fee	\$3.00	\$3.00	\$5.95

Note: Range represents peak/off-peak.

\*Includes domestic discounts in 1999.

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<sup>2</sup> The chart shows per minute rates for each carrier's international discount calling plan with the lowest monthly fee. For example, MCI WorldCom offers three different international calling plans which can reduce the per minute cost for calls to India to as low as \$0.55/minute, if the subscriber pays a higher monthly fee.

## **B. Countries with WTO Commitments that Allow a Majority Foreign-owned Company to Provide Facilities-based International Service**

The following countries allow foreign entities to own a majority interest in facilities used to provide international service, including voice and data:

### Europe

Austria, Belgium, Denmark, Finland, France, Germany, Iceland, Italy, Luxembourg, Netherlands, Norway, Spain, Sweden, Switzerland, United Kingdom

### Asia Pacific

Japan, Australia, New Zealand

### Latin America

Colombia, El Salvador, Guatemala, Chile

### New Countries<sup>3</sup>

Ireland

Peru

Portugal

## **C. U.S. Investment in Foreign Countries**

### 1999 Investment

According to a report titled “2000 Multimedia Telecommunications Review and Forecast,”<sup>4</sup> the telecom equipment industry, which weathered economic downturns in Latin America and Asia without a significant decrease in revenue, saw spending rise 16.7% in 1999 in major international markets such as Canada, Mexico, South America and the Asia-Pacific region. Spending on telecom equipment and services is estimated to reach \$983 billion by year-end in Canada, Mexico, Western and Eastern Europe, Latin America, and the Asia-Pacific region combined. Spending on transport services, equipment, and support services will soar to \$1.8 trillion in 2003 at a 16.7% compound annual growth rate. The report states that U.S. manufacturers are expected to capture \$45 billion of an estimated \$345 billion of international spending on telecom equipment in 2003.<sup>5</sup>

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<sup>3</sup> The list of new countries is a list of countries whose commitments under the WTO Basic Telecom Agreement, with respect to foreign ownership of facilities for the provision of international voice traffic, have come into effect or restrictions previously in effect have been lifted since last year's report. Peru's obligations became effective June 1, 1999. Ireland, Portugal and Canada's obligations became effective January 1, 2000.

<sup>4</sup> The Telecommunications Industry Association (TIA) and the Multimedia Telecommunications Association (MMTA) jointly issued this report.

<sup>5</sup> Communications Daily (Dec. 15, 1999), based on the report by the Telecommunications Industry Association and the Multimedia Telecommunications Association.

Mexican long distance operator Alestra, owned 49% by AT&T, plans to invest \$61 million over the next thirteen months as part of its effort to expand infrastructure. The investment follows the company's original plan to invest \$1 billion between 1996 and year-end 2000. Investments to date now total \$930 million. Alestra plans to use its long distance infrastructure to offer local services to existing clients in Mexico City, Guadalajara, and Monterrey. U.S.-based network solutions provider Lucent Technologies supplied most of the company's fiber optic infrastructure and Harris Corporation supplied its microwave technology.

This past year, regulators approved the Concert \$10 billion global venture between AT&T and British Telecom (BT), which has the goal of serving the entire communications needs of multinational companies and individuals around the world. In a press release, AT&T and BT reported they have agreed to invest a total of \$1 billion, split equally between them, in U.S. businesses involved in high technology and emerging communications markets.<sup>6</sup>

The venture combines the cross-border assets and operations of each company. These take into account their existing international networks, international traffic, and international products for business customers, including an expanding set of Concert services and AT&T and BT's multinational accounts in specific industry sectors.<sup>7</sup> Further, the two companies plan to build an intelligent, managed Internet Protocol (IP)-based global network. This network will support global electronic commerce, global call centers, and new Internet-based solutions to support multinational organizations and executives.<sup>8</sup>

In April 1999, Qwest and KPN completed the formation of a joint venture to create a pan-European IP-based fiber optic network linked to Qwest's infrastructure in North America for data, voice and video. The Strategis Group<sup>9</sup> reports that in order to complete the deal, the venture expects to raise approximately \$800 million of debt. According to the Strategis Group, an additional investment of \$500 million a year will be allocated over the next two years.

According to the December 1999 Bear Stearns Report titled "Telecommunications Services," each party owns 50% of the venture and has contributed transatlantic capacity that connects the Euro Rings with Qwest's network in North America, in addition to other assets. Upon creation of the KPN Qwest joint venture, Qwest contributed Xlink Internet Services and the operating subsidiaries of EUnet International Ltd, which Bear Stearns reports totaled approximately \$300 million in net book value.

In December 1999, KPN Qwest announced that it had reached an \$11 million, 10-year deal to

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<sup>6</sup> Source: Press Release on Concert web site, at <http://www.concert.com/howeare/att072698.asp>.

<sup>7</sup> Source: Id.

<sup>8</sup> Source: Id.

<sup>9</sup> The Strategis Group is a telecommunications consulting group based in Washington DC.

provide IP broadband to Europe Online Networks.<sup>10</sup> This deal is the latest example of KPN Qwest's expansion into Europe as it rolls out its pan-European network. In November 1999, KPN Qwest achieved a local access agreement with the UK-based Colt Telecommunications to offer IP and ATM local connectivity in all cities served by Colt's network.<sup>11</sup>

Bear Stearns, in its Telecommunications Services Report dated May 1999, reports that Level 3 spent \$75 million on international and transoceanic networks. Bear Stearns notes that Level 3 Communications has embarked on a plan to become a facilities-based provider of a broad range of integrated services in the US, Europe, and Asia. To attain this goal, the company is combining construction, purchase and leasing of facilities and other assets to supply end-to-end services. The company is building the network around IP technology. According to Bear Stearns, in April 1999, Level 3 contracted with Tyco Submarine Systems to design and build a transatlantic terabit cable system from Long Island to Cornwall, UK. The cable system is expected to cost between \$600 and \$800 million and will provide service by September 2000.

Bear Stearns also reports that Level 3 plans to finalize a contract relating to the construction of Ring 1 of its European Network in France, Belgium, Netherlands, Germany, and the UK. Ring 1, which is an inter-city network of approximately 3,500 miles, will ultimately connect a minimum of thirteen local city networks in Europe. The network will be linked to the Level 3 U.S. network by Level 3's cable system. Bear Stearns reports that in May 1999, Level 3 and Colt Telecom Group announced an agreement to share costs for the construction of European networks. The agreement calls for Level 3 to share construction costs of Colt's planned 1600 mile inter-city Germany network linking Berlin, Cologne, Düsseldorf, Frankfurt, Hamburg, Munich, and Stuttgart. In return, Colt will share construction costs of Level 3's planned European network.

Global Crossing's recent \$1 billion purchase of the British company, Racal, is a bellwether of the industry trend to offer "one-stop shopping" for consumers, and a sign of the importance of the European market. In addition, the Strategis Group reports that Global Crossing is expected to spend \$800 million on its European infrastructure by 2000.

According to the Strategis Group, MCI WorldCom is projected to invest approximately \$1.2 billion in capital expenditures for all international networks and facilities, including pan-European networks to provide service to Stuttgart, Basel, Geneva, and Dublin. The Strategis Group reports that it plans to establish facilities-based national services in the UK, France, Germany, and Belgium, and extend its network services to Denmark. In an October 1999 press release, MCI WorldCom announced the formation of a new, wholly owned operating company in Korea to provide business customers with data communications services. Korea is the fifth Asian market where MCI WorldCom operates on a local and global basis. The others include Australia, Hong Kong, Japan, and Singapore.

Merrill Lynch reported in a 1999 publication titled "Alternative Multinational Carriers" that new

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<sup>10</sup> Source: KPN Qwest Press Release at: [http://www.kpnqwest.com/pressroom/press\\_main.asp](http://www.kpnqwest.com/pressroom/press_main.asp).

<sup>11</sup> Source: Id.



entrants have gained significant share from incumbents, and it predicts they could capture 20% within the next five years. Consolidation is expected among new entrants as they seek to gain scale by acquiring facilities, customers, and distribution channels. Examples include the following: Global TeleSystems Group's purchase of Esprit Telecom, IDT's purchase of Interexchange, RSL Communication's purchase of Delta3, and Star Telecom's purchase of Primus Telecom.

U.S. local telecommunications operators continued to align themselves with foreign public telecommunications operators and to launch into the global telecom market. In its August 1999 Telecommunications Services Report, Bear Stearns reports that Ameritech made a \$3.4 billion investment in Bell Canada this past May, providing Ameritech with a 20% stake in the Canadian operator.

#### **D. World Telecommunications Revenues Handled by Monopoly Providers and Selected New Entrants**

Attachment 1 contains 1998 revenue data for the twenty-five largest public telecommunications operators (PTOs). Attachment 2 shows, for selected U.S. and foreign non-incumbent multinational carriers, first quarter revenue figures for 1999 and 1998 and the percent of change in revenue from first quarter of the previous year to first quarter of the next year.

#### **E. Number of New Entrants Providing Service in:**

##### **1. Top Ten Foreign Markets by Teledensity**

The list below shows the total number of new entrants providing service in the foreign market. A new entrant is defined as any provider of telecommunications services other than the former monopoly provider. Markets included in the list are the top ten markets by teledensity, which is measured by the number of telephone lines per inhabitant.<sup>12</sup>

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<sup>12</sup> Source: A Telegeography Directory, New International Carriers 1999, Europe, Asia-Pacific and Americas Editions; A Telegeography Directory, New International Carriers, 1998, Europe, Asia-Pacific and Americas Editions.

	<u>1998</u>	<u>1999</u>
Sweden	14	15
Switzerland	23	40
Denmark	12	18
Canada	15	47
Luxembourg	2	3
Iceland	1	3
France	33	48
Finland	8	8
Hong Kong	4	59
Netherlands	26	29

## 2. Top Five Foreign Markets by Market Revenue

In the current report, we felt it would be helpful to include a list of new entrants providing service in the top five markets by market revenue, in addition to the previously provided top ten markets by teledensity to give a more complete picture of the global telecommunications landscape.<sup>13</sup>

	<u>1998</u>	<u>1999</u>
Japan	9	42
Germany	32	44
United Kingdom	122	158
France	33	48
Italy	14	20

## F. International Settlement Rates

Settlement rates are the rates international carriers pay each other to complete international calls. One of the keys to lowering consumer prices is lowering the settlement rates U.S. carriers pay to foreign carriers. Attachment 3 details U.S. settlement rates with carriers from WTO signatories. Attachment 3 is separated into two parts: the first part provides data on WTO signatories that have made full market access commitments; the second part provides data from countries with lesser commitments. These tables demonstrate that settlement rates have generally been falling.

As of year-end 1999, the FCC will have achieved compliance with its August 1997 Benchmarks Order for 99% of the net settled minutes for upper income countries (those that were scheduled to be in compliance by 1/1/99) and 86% of net settled minutes for upper-middle income countries (those scheduled to be in compliance by 1/1/00).

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<sup>13</sup> Source: Id.

## **G. Interconnection Charges**

Interconnection charges refer to the charges competing carriers are required to pay to interconnect directly with the incumbent operator and terminate international and domestic calls. Only countries with liberalized telecommunications markets, in general, have publicly available interconnection charges. Attachment 4 lists national interconnection charges for European Union countries. In nearly all cases for which data were available, interconnection charges have declined from 1997 to 1999.

## **H. Data on Teledensity and Foreign & U.S. Billed Traffic in WTO Signatories**

Attachment 5 provides information on foreign and U.S. billed traffic for 1997 and 1998, as reported by U.S. carriers.

Attachment 6 provides teledensity information (telephone lines per 100 inhabitants) for WTO members. It includes actual teledensity data for 1996 through 1998. The table shows that teledensity is generally rising in WTO members.

## **II. Satellite Telecommunications Information**

The attached information is an update to our 1998 submission of requested data regarding global and regional satellite services.

The satellite services sector of the telecommunications market is growing rapidly and continues to diversify its service offerings. The Satellite Industry Association (SIA), which represents the U.S. commercial satellite industry, estimates that over 1,000 new commercial satellites will be built and launched over the next decade. The new satellite systems will bring business and other consumers a wide variety of new broadband and mobile voice and data services and will connect users in countries around the globe.

According to SIA, total revenue in 1998 for the commercial satellite industry exceeded \$65.9 billion and the percentage of annual revenue growth is expected to be in the double digits over the next decade. Clearly, the WTO Agreement has set an important benchmark for opening markets to satellite services around the world. Many countries – particularly in Latin America and increasingly in Europe, Africa, and Asia as well – have liberalized their regulations. Furthermore, there are a significant number of countries that now: permit multiple entities to obtain licenses to provide voice, data, or video services for their own use or for third-party use; permit ownership and operation of private earth station equipment; and permit choice in providers of satellite capacity. Several countries allow licensed radio and television broadcasters and cable television providers to own their own transmission broadcast facilities and to purchase satellite capacity without restriction.

According to SIA, satellite companies continue to view the WTO Agreement as a positive force in the development and growth of the satellite industry. In fact, many satellite manufacturers are

changing satellite designs to increase the coverage area of various satellite system configurations based on the assumption that future continued success on the regulatory front will result in market access when satellites are eventually launched.

Over the past year, the FCC has authorized two non-U.S. satellite service providers, TMI and New Skies, to offer service in the United States. In addition, the FCC has developed a “Permitted List” of U.S. and non-U.S. satellite systems whereby earth station operators providing fixed-satellite service in the conventional C- and Ku-bands may access any of these designated satellites without additional Commission action, consistent with the technical parameters authorized in the earth station licenses.

Attachments 7 and 8 have been updated from last year on a company-specific basis. All of the attached information was gathered using public information sources.

## Attachment 1

### Top 25 Global Public Telephone Operators' (PTO's) Revenue

Rank	Company	Origin Country	1997 Revenue (US\$ billions)	1998 Revenue (US\$ billions)	1998 % of Global Market
1	NTT	Japan	71.5	90.0	11.25%
2	AT&T Corporation	USA	51.0	53.2	6.65%
3	Deutsche Telecom	Germany	38.9	40.1	5.01%
4	Bell Atlantic	USA	30.4	31.6	3.95%
5	SBC Communications	USA	24.9	28.8	3.60%
6	France Telecom	France	26.0	27.7	3.46%
7	Telecom Italia	Italy	25.0	26.4	3.30%
8	British Telecom	UK	26.3	25.9	3.24%
9	GTE Corp.	USA	23.3	23.6	2.95%
10	Telefonica	Spain	17.4	19.6	2.45%
11	MCI Worldcom*	USA	19.7	17.7	2.21%
12	Telstra	Australia	16.5	17.3	2.16%
13	Sprint	USA	14.9	16.0	2.00%
14	Bell South	USA	13.8	14.7	1.84%
15	Cable & Wireless	UK	n/a	11.6	1.45%
16	Ameritech	USA	11.1	11.4	1.43%
17	U.S. West	USA	9.6	9.9	1.24%
18	KPN	Netherlands	n/a	8.4	1.05%
19	DDI	Japan	n/a	7.9	0.99%
20	Swisscom	Switzerland	6.4	7.2	0.90%
21	Telmex	Mexico	8.6	9.3	1.16%
22	Hong Kong Telecom	Hong Kong	n/a	4.5	0.57%
23	KDD	Japan	3.5	2.8	0.35%
24	Singapore Telecom	Singapore	4.4	4.9	0.61%
25	SK Telecom	South Korea	3.1	2.5	0.32%

Top 25 Total                      \$513.1                      64.13%

Total Global Telecom Market                      \$800.00                      100.00%

\* MCI Communications and WorldCom merged in 1998. The 1997 revenue data are only for MCI whereas the 1998 data reflect the new merged entity.

Sources: 1. Morgan Stanley Dean Witter, "Global Wireline Communications Industry: 1998", Global Telecom Team (April 13, 1998).

2. Morgan Stanley Dean Witter, "The New Age of Telecommunications: What Does It Take?", The Telecommunications Group (March 16, 1999).

## ATTACHMENT 2

### NON-INCUMBENT MULTINATIONAL CARRIERS – U.S. AND FOREIGN

#### 1st Quarter 1999 Revenue

<b>CARRIER</b>	<b>\$M 1<sup>st</sup> Quarter of 1998</b>	<b>% Year to Year Change from 1<sup>st</sup> Quarter of 1997 to 1998</b>	<b>\$M 1<sup>st</sup> Quarter of 1999</b>	<b>% Year to Year Change from 1<sup>st</sup> Quarter of 1998 to 1999</b>
Teleglobe <sup>1</sup>	860	26%	747	-13%
Equant	>200/320 <sup>2</sup>	200%	444	39%
RSL Communications	132	212%	340	159%
Star Telecom	129	52%	228	67%
Global Telesystems Group <sup>3</sup>	78	54%	171	270%
Energis <sup>4</sup>	66	57%	168	73%
IDT Corporation	87	153%	161	127%
Pacific Gateway Exchange	105	104%	141	34%
COLT Telecom Group	59	134%	137	130%
Primus Telecom Group <sup>5</sup>	118	24%	131	64%
Viatel <sup>6</sup>	21.2	46%	62	190%
WorldCom <sup>7</sup>	2,350	39%	NA	NA
Telegroup <sup>4</sup>	86	16%	NA	NA
Esprit Telecom Group <sup>5</sup>	24	36%	NA	NA

Source: Bankers Trust Alex Brown: "Turf War On a Global Scale 3.0," Communications Services, June 1, 1999.  
Some information has been obtained from company web sites.

<sup>1</sup> Data for 1999 reflect only revenue for Teleglobe Communications Corporation (TCC) while 1998 data reflect combined revenues for TCC and Excel Canada.

<sup>2</sup> Equant, a U.K.-based telecom operator, reports on a 6-month basis that runs from January 1-June 30 and July 1-December 31. The numbers compare the 6-month period ending June 30, 1998 to the 6-month period ending June 30, 1999. Equant's actual revenues for the 6-month period ending June 31, 1998 were \$320 million.

<sup>3</sup> Global TeleSystems Group's purchased Esprit Telecom.

<sup>4</sup> Energis' revenues reflect an end-of-year total for 1998. Revenues totaled \$97.1 million for end-of-year 1997, and therefore revenues grew 73% from 1997 to 1998.

<sup>5</sup> Primus acquired some of Telegroup's assets after Telegroup filed for bankruptcy.

<sup>6</sup> Viatel has been added to the list. It is a new entrant with a strong international presence.

<sup>7</sup> Information for WorldCom has not been provided because it merged with MCI.

## ATTACHMENT 3

### U.S. SETTLEMENT RATES WITH WTO SIGNATORIES

*Group A: Signatories with Full Market Access Commitments  
Effective 1999*

<u>WTO SIGNATORY</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>Benchmark</u>	<u>Effective</u>
					<u>Rate</u>	<u>Date</u>
Australia	\$0.225	\$0.210	\$0.150	\$0.150	\$0.15	1/1/99
Austria	\$0.215	\$0.205	\$0.135	\$0.135	\$0.15	1/1/99
Belgium	\$0.280	\$0.185	\$0.135	\$0.135	\$0.15	1/1/99
Canada	\$0.110	\$0.100	\$0.100	\$0.100	\$0.15	1/1/99
Chile	\$0.500	\$0.500	\$0.350	\$0.350	\$0.19	1/1/00
Denmark	\$0.145	\$0.135	\$0.110	\$0.110	\$0.15	1/1/99
Dominican Republic	\$0.450	\$0.350	\$0.300	\$0.190	\$0.19	1/1/01
El Salvador	\$0.550	\$0.440	\$0.385	\$0.385	\$0.19	1/1/01
Finland	\$0.255	\$0.205	\$0.160	\$0.135	\$0.15	1/1/99
France	\$0.175	\$0.130	\$0.105	\$0.105	\$0.15	1/1/99
Germany	\$0.115	\$0.100	\$0.105	\$0.105	\$0.15	1/1/99
Guatemala	\$0.500	\$0.450	\$0.385	\$0.320	\$0.19	1/1/01
Iceland	\$0.470	\$0.375	\$0.240	\$0.135	\$0.15	1/1/99
Italy	\$0.260	\$0.165	\$0.110	\$0.110	\$0.15	1/1/99
Ireland	\$0.175	\$0.165	\$0.105	\$0.105	\$0.15	1/1/99
Japan	\$0.455	\$0.430	\$0.145	\$0.145	\$0.15	1/1/99
Korea	\$0.615	\$0.490	\$0.425	\$0.355	\$0.19	1/1/00
Luxembourg	\$0.290	\$0.135	\$0.135	\$0.135	\$0.15	1/1/99
Malaysia	\$0.445	\$0.395	\$0.395	\$0.190	\$0.19	1/1/00
Mexico	\$0.485	\$0.395	\$0.370	\$0.190	\$0.19	1/1/00
Netherlands	\$0.180	\$0.135	\$0.095	\$0.070	\$0.15	1/1/99
New Zealand	\$0.215	\$0.135	\$0.135	\$0.135	\$0.15	1/1/99
Norway	\$0.145	\$0.110	\$0.080	\$0.080	\$0.15	1/1/99
Peru	\$0.615	\$0.500	\$0.350	\$0.330	\$0.19	1/1/01
Philippines	\$0.500	\$0.500	\$0.360	\$0.285	\$0.19	1/1/01
Portugal	\$0.415	\$0.300	\$0.197	\$0.150	\$0.15	1/1/99
Spain	\$0.320	\$0.240	\$0.135	\$0.135	\$0.15	1/1/99
Sweden	\$0.085	\$0.060	\$0.060	\$0.060	\$0.15	1/1/99
Switzerland	\$0.255	\$0.170	\$0.135	\$0.135	\$0.15	1/1/99
United Kingdom	\$0.110	\$0.070	\$0.060	\$0.060	\$0.15	1/1/99
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<u>Group A:</u>						
Average Settlement Rate	\$0.319	\$0.259	\$0.198	\$0.168		
Percent Change		-18.6%	-23.5%	-15.6%		

### ATTACHMENT 3 (continued)

*Group B: Signatories without Full Market Access Commitments  
Effective 1999*

WTO SIGNATORY	1996	1997	1998	1999	Benchmark Rate	Effective Date
Antigua & Barbuda	\$0.500	\$0.455	\$0.405	\$0.365	\$0.19	1/1/00
Argentina	\$0.715	\$0.425	\$0.350	\$0.280	\$0.19	1/1/00
Bangladesh	\$1.000	\$0.800	\$0.800	\$0.685	\$0.23	1/1/03
Barbados	\$0.550	\$0.475	\$0.475	\$0.475	\$0.19	1/1/00
Belize	\$0.710	\$0.600	\$0.475	\$0.375	\$0.19	1/1/01
Bolivia	\$0.625	\$0.550	\$0.460	\$0.370	\$0.19	1/1/01
Brazil	\$0.515	\$0.425	\$0.325	\$0.300	\$0.19	1/1/00
Brunei Darussalam	\$0.725	\$0.475	\$0.410	\$0.150	\$0.15	1/1/99
Bulgaria	\$0.500	\$0.450	\$0.350	\$0.300	\$0.19	1/1/01
Colombia	\$0.625	\$0.500	\$0.500	\$0.325	\$0.19	1/1/01
Cote d'Ivoire	\$1.100	\$1.100	\$0.985	\$0.825	\$0.23	1/1/03
Cyprus	\$0.650	\$0.475	\$0.390	\$0.390	\$0.15	1/1/99
Czech Republic	\$0.360	\$0.305	\$0.275	\$0.185	\$0.19	1/1/00
Dominica	\$0.500	\$0.405	\$0.405	\$0.405	\$0.19	1/1/01
Ecuador	\$0.550	\$0.500	\$0.500	\$0.340	\$0.19	1/1/01
Estonia	\$0.500	\$0.390	\$0.310	\$0.290	\$0.19	1/1/01
Ghana	\$0.500	\$0.500	\$0.500	\$0.375	\$0.23	1/1/03
Greece	\$0.505	\$0.430	\$0.275	\$0.170	\$0.19	1/1/00
Grenada	\$0.500	\$0.405	\$0.405	\$0.405	\$0.19	1/1/01
Hong Kong, China	\$0.470	\$0.395	\$0.305	\$0.070	\$0.15	1/1/99
Hungary	\$0.505	\$0.305	\$0.275	\$0.190	\$0.19	1/1/00
India	\$0.800	\$0.710	\$0.640	\$0.640	\$0.23	1/1/02
Indonesia	\$0.700	\$0.650	\$0.525	\$0.425	\$0.19	1/1/01
Israel	\$0.590	\$0.350	\$0.295	\$0.150	\$0.15	1/1/99
Jamaica	\$0.650	\$0.625	\$0.625	\$0.525	\$0.19	1/1/01
Kenya	\$0.700	\$0.650	\$0.550	\$0.550	\$0.23	1/1/03
Kyrgyz Republic	\$1.000	\$1.000	\$1.000	\$1.000	\$0.23	1/1/02
Latvia	\$0.940	\$0.410	\$0.410	\$0.410	\$0.19	1/1/01
Mauritius	\$0.750	\$0.750	\$0.750	\$0.750	\$0.19	1/1/00
Morocco	\$0.725	\$0.545	\$0.410	\$0.410	\$0.19	1/1/01
Pakistan	\$1.100	\$1.000	\$0.600	\$0.600	\$0.23	1/1/02
Papua New Guinea	\$0.795	\$0.615	\$0.520	\$0.520	\$0.19	1/1/01
Poland	\$0.475	\$0.350	\$0.275	\$0.190	\$0.19	1/1/01
Romania	\$0.755	\$0.615	\$0.520	\$0.345	\$0.19	1/1/01
Senegal	\$1.300	\$1.300	\$0.690	\$0.590	\$0.23	1/1/03
Singapore	\$0.450	\$0.425	\$0.355	\$0.150	\$0.15	1/1/99
Slovak Republic	\$0.650	\$0.340	\$0.290	\$0.205	\$0.19	1/1/01
South Africa	\$0.500	\$0.500	\$0.400	\$0.350	\$0.19	1/1/00
Sri Lanka	\$1.000	\$1.000	\$0.800	\$0.600	\$0.23	1/1/02
Suriname	\$1.080	\$1.080	\$1.080	\$0.570	\$0.19	1/1/01
Thailand	\$0.750	\$0.600	\$0.525	\$0.350	\$0.19	1/1/01
Trinidad & Tobago	\$0.650	\$0.575	\$0.500	\$0.415	\$0.19	1/1/00
Tunisia	\$0.775	\$0.470	\$0.480	\$0.440	\$0.19	1/1/01
Turkey	\$0.580	\$0.410	\$0.375	\$0.330	\$0.19	1/1/01
Uganda	\$0.600	\$0.500	\$0.250	\$0.250	\$0.23	1/1/03
Venezuela	\$0.575	\$0.490	\$0.400	\$0.320	\$0.19	1/1/01
<b>Group B:</b>						
Average Settlement Rate	\$0.685	\$0.572	\$0.488	\$0.399		
Percent Change		-16.4%	-14.8%	-18.2%		
<b>Group A and Group B:</b>						
Average Settlement Rate	\$0.535	\$0.444	\$0.369	\$0.304		
Percent Change		-17.1%	-16.7%	-17.8%		

**Note:**

The settlement rates were compiled from "Accounting Rates for International Message Telephone States," Federal Communications Commission, International Bureau, Telecommunications Division



## Attachment 4

### EU interconnection rates

Ecu-cents per minute at peak rates for 1997 and 1998, Euro for 1999

<u>Country</u>	<u>Local</u>			<u>Single Transit</u>			<u>Double Transit</u>		
	1997	1998	1999	1997	1998	1999	1997	1998	1999
Austria	7.61	1.80	1.82	7.61	1.80	1.82	8.41	2.37	2.40
Belgium	2.78	1.11	1.07	2.78	2.10	1.80	3.62	2.94	2.56
Denmark	0.98	0.98	0.93	1.82	1.82	1.67	2.22	2.22	1.91
Finland	1.81	1.42	1.43	1.81	1.42	1.43	4.20	2.81	3.28
France	0.71	0.70	0.61	1.73	1.71	1.50	2.55	2.52	2.23
Germany	1.00	0.99	1.01	1.71	1.69	1.72	2.61	2.58	2.63
Greece	n/a	1.81	n/a	n/a	1.81	n/a	n/a	2.59	n/a
Italy	1.54	1.51	1.00	2.52	2.47	1.60	n/a	n/a	2.30
Ireland	n/a	2.20	1.00	n/a	4.15	1.60	n/a	5.18	2.26
Luxembourg	n/a	2.01	2.25	n/a	2.01	2.25	n/a	2.01	2.25
Netherlands	2.00	1.17	1.00	2.00	1.60	1.41	2.52	2.06	1.70
Portugal	n/a	1.20	0.99	n/a	2.37	1.63	n/a	18.00	2.58
Spain	1.51	1.49	0.99	1.51	1.49	1.59	4.22	4.17	3.07
Sweden	1.68	1.14	0.86	2.15	1.77	1.16	2.98	2.41	1.59
U.K.	0.64	0.61	0.62	0.91	0.87	0.90	1.74	1.69	1.27

## Attachment 4

### EU interconnection rates

U.S. Cents per minute at peak rates

<u>Country</u>	<u>Local</u>			<u>Single Transit</u>			<u>Double Transit</u>		
	1997	1998	1999	1997	1998	1999	1997	1998	1999
Austria	8.36	2.00	1.91	8.36	2.00	1.91	9.24	2.63	2.52
Belgium	3.05	1.23	1.12	3.05	2.33	1.89	3.98	3.26	2.69
Denmark	1.08	1.09	0.98	2.00	2.02	1.75	2.44	2.46	2.00
Finland	1.99	1.58	1.50	1.99	1.58	1.50	4.61	3.12	3.44
France	0.78	0.78	0.64	1.90	1.90	1.57	2.80	2.80	2.34
Germany	1.10	1.10	1.06	1.88	1.88	1.81	2.87	2.86	2.76
Greece	n/a	2.01	n/a	n/a	2.01	n/a	n/a	2.87	n/a
Italy	1.69	1.68	1.05	2.77	2.74	1.68	n/a	n/a	2.41
Ireland	n/a	2.44	1.05	n/a	4.60	1.68	n/a	5.75	2.37
Luxembourg	n/a	2.23	2.36	n/a	2.23	2.36	n/a	2.23	2.36
Netherlands	2.20	1.30	1.05	2.20	1.78	1.48	2.77	2.29	1.78
Portugal	n/a	1.33	1.04	n/a	2.63	1.71	n/a	19.97	2.71
Spain	1.66	1.65	1.04	1.66	1.65	1.67	4.63	4.63	3.22
Sweden	1.84	1.26	0.90	2.36	1.96	1.22	3.27	2.67	1.67
U.K.	0.70	0.68	0.65	1.00	0.97	0.94	1.91	1.88	1.33

Notes: September 1997, \$/ECU = 1.0981  
May 1998, \$/ECU = 1.1096  
September 1999, \$/EURO = 1.0497

Source: Interconnection Rates: 1997, 1998 from Porte-Parole, Falling Cost of Fixed Networked Telecommunications in Europe, July 1998,  
1999 from The European Commission, Fifth Report on the Implementation of the Telecommunications Regulatory Package, November 11, 1999.

Exchange Rates, Federal Reserve

Local exchange call termination: interconnection at or near the incumbent's local exchange.

Single transit exchange termination: interconnection at the tandem exchange in the incumbent's network nearest to the terminating local exchange, typically less than 200 kilometers. Sometimes called single tandem or metropolitan level service.

Double transit exchange termination: The incumbent carries the call through the trunk network for 200 or more kilometers before terminating. Sometimes called double tandem or national level service.

## ATTACHMENT 5

### U.S. TRAFFIC WITH WTO SIGNATORIES

<u>WTO SIGNATORY</u>	<u>FOREIGN BILLED MINUTES</u>		<u>U.S. BILLED MINUTES</u>	
	<i>(calls to the U.S.)</i>		<i>(calls from the U.S.)</i>	
	<u>1997</u>	<u>1998</u>	<u>1997</u>	<u>1998</u>
Antigua & Barbuda	7,115,819	7,107,775	54,506,678	66,719,925
Argentina	38,596,380	46,086,064	226,585,250	233,981,041
Australia	131,569,530	261,265,578	389,186,489	445,122,839
Austria	24,951,748	26,127,656	58,888,931	75,985,975
Bangladesh	4,469,719	4,718,364	60,076,079	52,729,727
Barbados	12,667,958	12,575,598	38,785,436	47,696,085
Belgium	50,477,727	39,674,103	122,795,210	116,719,060
Belize	4,170,792	4,972,453	14,686,178	15,061,084
Bolivia	5,385,806	5,456,986	34,427,178	52,838,539
Brazil	159,248,397	180,184,691	495,323,734	591,195,594
Brunei Darussalam	685,163	881,120	2,362,320	8,229,089
Bulgaria	1,344,957	1,584,034	12,538,600	14,556,691
Canada	3,145,941,566	3,358,956,938	3,922,086,328	3,881,035,995
Chile	61,028,462	81,136,627	112,992,559	128,227,790
Colombia	67,640,760	51,227,342	263,350,037	224,266,040
Cote d'Ivoire	2,772,729	3,385,163	15,120,099	16,716,097
Cyprus	4,102,808	4,564,433	9,827,450	11,093,247
Czech Republic	8,815,481	9,934,223	27,014,751	30,295,227
Denmark	27,994,754	26,519,824	76,302,051	75,841,746
Dominica	2,212,662	2,108,923	17,124,731	29,295,426
Dominican Republic	107,817,532	111,412,775	379,150,470	439,057,321
Ecuador	17,413,209	13,563,630	184,854,451	113,526,248
El Salvador	12,743,151	16,048,993	155,245,851	198,892,640
Estonia	1,311,042	1,523,455	2,930,421	5,624,290
Finland	17,787,971	14,064,555	29,464,238	32,070,084
France	216,746,922	270,817,706	502,561,833	575,472,724
Germany	325,240,908	471,169,441	994,884,808	1,408,763,612
Ghana	5,240,219	7,762,385	50,269,789	44,832,311
Greece	35,148,254	42,788,898	97,898,305	116,252,178
Grenada	2,375,226	2,325,612	17,054,700	63,825,297
Guatemala	15,375,065	17,913,027	126,547,737	145,642,331
Hong Kong, China	78,379,209	214,669,927	671,797,709	598,108,183
Hungary	14,863,885	12,682,758	40,909,624	39,380,507
Iceland	6,918,811	8,890,797	10,562,442	14,060,636
India	49,707,870	58,470,938	574,380,674	755,297,617
Indonesia	28,175,746	28,637,808	119,051,535	103,364,245
Ireland	48,663,111	68,971,405	134,329,538	161,006,122
Israel	121,555,694	171,390,354	214,880,358	221,874,627
Italy	117,814,252	133,973,684	476,352,714	529,505,067
Jamaica	49,902,389	51,903,485	254,091,318	291,487,463
Japan	342,893,941	336,428,346	849,358,999	808,781,369
Kenya	3,480,276	4,122,039	25,698,678	26,485,742
Korea	199,932,652	219,729,719	426,476,913	384,149,732
Kyrgyz Republic	8,110	4,892	1,746,448	825,642
Latvia	1,209,108	974,333	3,186,037	4,644,611
Luxembourg	6,154,177	6,894,882	11,075,994	16,018,922
Malaysia	23,602,566	25,158,025	86,630,077	103,651,471

ATTACHMENT 5 (continued)

<b>WTO SIGNATORY</b>	<b>FOREIGN BILLED MINUTES</b>		<b>U.S. BILLED MINUTES</b>	
	<i>(calls to the U.S.)</i>		<i>(calls from the U.S.)</i>	
	<b>1997</b>	<b>1998</b>	<b>1997</b>	<b>1998</b>
Mauritius	487,927	598,379	6,762,451	14,018,985
Mexico	942,158,920	1,086,310,773	2,766,488,494	3,020,570,877
Morocco	5,808,115	6,372,647	14,401,988	74,918,664
Netherlands	98,661,319	416,747,866	222,710,538	280,795,926
New Zealand	37,596,723	54,672,922	110,777,088	75,621,277
Norway	52,504,621	51,832,479	66,451,714	90,625,278
Pakistan	10,518,252	15,610,182	161,013,491	213,480,603
Papua New Guinea	662,939	873,510	2,376,641	1,803,485
Peru	24,500,128	31,425,645	164,810,714	185,467,465
Philippines	33,363,428	50,688,174	448,866,511	574,574,981
Poland	27,311,276	27,880,730	170,558,158	189,479,771
Portugal	14,972,676	23,130,262	55,159,003	71,957,330
Romania	5,248,333	21,967,892	26,884,438	76,112,046
Senegal	1,717,016	2,016,631	19,342,020	19,925,012
Singapore	61,419,122	65,635,330	202,681,493	175,699,888
Slovak Republic	3,335,617	3,335,101	10,612,303	11,218,818
South Africa	31,119,827	36,484,345	111,618,488	130,778,758
Spain	85,309,869	69,495,669	191,010,953	254,022,029
Sri Lanka	1,987,980	3,054,378	16,938,724	21,174,993
Suriname	868,592	644,589	9,923,684	3,431,142
Sweden	185,679,847	113,844,782	143,818,519	150,968,300
Switzerland	98,017,798	102,139,822	246,280,971	199,877,106
Thailand	26,280,859	32,215,132	117,177,476	130,337,078
Trinidad & Tobago	29,319,430	31,508,545	94,345,185	105,862,920
Tunisia	1,513,284	1,135,704	4,470,221	3,786,847
Turkey	24,986,937	28,379,378	62,531,049	113,736,357
Uganda	703,254	886,897	4,812,428	10,645,215
United Kingdom	946,020,819	806,808,330	1,553,813,287	1,169,563,822
Venezuela	59,069,810	60,244,323	213,508,910	233,340,641

**Notes:**

*The data were compiled from the FCC's 1997 and 1998 Section 43.61 International Traffic Data reports for all U.S. points and types of international telephone service.*

## ATTACHMENT 6

### TELEDENSITY IN WTO SIGNATORIES

<u>WTO SIGNATORY</u>	<u>TELEDENSITY</u>			
	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>
Antigua & Barbuda	38.84	42.34	Not Available	46.80
Argentina	15.99	17.38	19.13	20.27
Australia	50.93	51.88	50.54	51.21
Austria	46.55	46.89	49.18	49.10
Bangladesh	0.24	0.26	Not Available	0.30
Barbados	34.53	36.99	40.43	42.40
Belgium	45.75	46.52	46.81	50.02
Belize	13.40	13.33	13.69	13.75
Bolivia	4.68	4.32	6.88	6.88
Brazil	8.51	9.57	10.66	12.05
Brunei Darussalam	23.99	26.26	Not Available	24.68
Bulgaria	30.57	31.26	32.26	32.89
Canada	59.98	60.24	60.95	63.39
Chile	13.20	15.59	17.98	20.55
Colombia	9.98	11.76	14.75	15.35
Cote d'Ivoire	0.81	0.88	0.93	1.19
Cyprus	53.83	55.48	56.97	58.51
Czech Republic	23.65	27.31	31.84	36.39
Denmark	60.82	61.79	63.33	65.97
Dominica	24.13	26.39	Not Available	25.23
Dominican Republic	7.37	8.26	Not Available	9.28
Ecuador	6.52	7.33	7.53	7.83
El Salvador	5.28	5.61	Not Available	8.00
Estonia	27.74	29.87	32.10	34.29
Finland	55.01	54.90	55.59	55.39
France	55.80	56.36	57.50	56.97
Germany	49.35	53.84	54.98	56.68
Ghana	0.37	0.44	0.58	0.75
Greece	49.32	50.87	51.61	52.22
Grenada	24.23	24.34	Not Available	26.28
Guatemala	2.72	3.13	4.08	4.08
Hong Kong, China	53.25	54.69	56.54	55.77
Hungary	21.12	26.06	30.42	33.59
Iceland	55.48	57.61	61.69	64.65
India	1.29	1.54	1.86	2.20
Indonesia	1.69	2.13	2.47	2.70
Ireland	36.53	39.48	41.14	43.47
Israel	41.77	44.09	44.98	47.11
Italy	43.33	44.01	44.68	45.07
Jamaica	11.56	14.17	Not Available	16.57
Japan	48.80	48.92	47.86	50.26
Kenya	0.79	0.82	0.81	0.92
Korea	41.47	43.04	44.40	43.27
Kyrgyz Republic	7.92	7.47	7.56	7.64
Latvia	27.85	29.55	30.16	30.16
Luxembourg	56.50	59.16	66.87	69.17
Malaysia	16.56	18.32	19.49	19.76

ATTACHMENT 6 (continued)

<u>WTO SIGNATORY</u>	<u>TELEDENSITY</u>			
	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>
Mauritius	13.11	16.21	19.52	21.37
Mexico	9.39	9.28	9.60	10.36
Morocco	4.33	4.60	5.00	5.44
Netherlands	52.52	54.33	56.43	59.31
New Zealand	47.85	49.92	48.57	47.91
Norway	55.64	55.55	62.11	66.01
Pakistan	1.64	1.77	1.85	1.94
Papua New Guinea	1.01	1.07	Not Available	1.14
Peru	4.71	5.99	6.75	6.67
Philippines	2.09	2.49	2.90	3.70
Poland	14.84	16.91	19.43	22.76
Portugal	36.13	37.49	40.25	41.35
Romania	13.08	13.98	Not Available	16.73
Senegal	0.98	1.11	1.32	1.55
Singapore	48.18	51.33	54.29	56.20
Slovak Republic	20.84	23.19	25.86	28.63
South Africa	9.47	10.05	10.72	11.46
Spain	38.50	39.25	40.32	41.37
Sri Lanka	1.11	1.39	1.70	2.84
Suriname	13.21	13.16	14.62	15.23
Sweden	68.11	68.21	67.93	67.37
Switzerland	61.00	64.04	66.09	67.54
Thailand	5.86	7.00	7.96	8.35
Trinidad & Tobago	16.04	16.81	19.01	20.58
Tunisia	5.82	6.43	7.02	8.06
Turkey	21.16	22.36	25.04	25.41
United Kingdom	50.25	52.76	54.00	55.64
United States	62.57	63.99	64.37	66.13
Venezuela	11.09	11.74	11.64	11.67

**Notes:**

*Teledensity is defined as the number of main telephone lines per 100 inhabitants. The figures are published by the International Telecommunication Union in either its annual "Yearbook of Statistics" (1995 & 1996) or annual "World Telecommunication Development Report" (1997 & 1998).*

**ATTACHMENT 7**  
**Representative Satellite Service Provider Revenue**  
*(in \$ U.S. millions)*

<u>Satellite Company</u>	<u>Revenue</u>	
	1997	1998
American Mobile Satellite	\$44.2	\$87.2
APT Satellite	\$67.4	\$75.9
AsiaSat	\$128.7	\$116.5
BSkyB	\$2,114.6	\$2,394.2
Sirius Satellite Radio (formerly CD Radio)	negligible or negative	negligible or negative
Comsat	\$562.7	\$616.5
EchoStar	\$477.4	\$982.7
Gilat Satellite Networks	\$103.7	\$155.3
Globalstar Telecommunications	negligible or negative	negligible or negative
Globecom	\$58.1	\$49.1
Hughes Electronics	\$5,128.3	\$5,963.9
ICO Global Communications	negligible or negative	\$0.1
Iridium World Communications	negligible or negative	\$0.2
Loral Space & Communications	\$1,312.6	\$1,301.7
Orbital Sciences	\$606.0	\$734.3
PanAmSat Corporation	\$629.9	\$767.3
Pasifik Satelit Nusantara	\$14.8	\$8.9
Pegasus	\$86.8	\$195.2
Shinawatra Satellite	\$39.9	\$78.2
Societe Europeenne des Satellites	\$489.7	\$499.6
SSE Telecom Inc.	\$45.8	\$36.7
Trimble Navigation	\$258.9	\$260.3
United States Satellite Broadcasting <sup>1</sup>	\$384.8	*
ViaSat, Inc.	\$64.2	\$71.5

1. USSB was purchased by Hughes in 1999.

Sources:

C.E UNTERBERG, TOWBIN

ING Barings

Merrill Lynch

Wall Street Journal ([www.wsj.com](http://www.wsj.com))

# ATTACHMENT 8

## Satellite Service Provider Market Access in WTO Members

Country	Iridium	Orbcomm	GlobalStar
	Licensed*	Licensed*	Licensed*
Angola		Licensed	
Antigua and Barbuda			
Argentina	Licensed	Licensed	
Australia	Licensed	Licensed	
Austria		Licensed	
Bahrain			
Bangladesh	Licensed		
Barbados		Licensed	
Belgium		Licensed	
Belize		Licensed	
Benin		Licensed	
Bolivia		Licensed	
Botswana		Licensed	
Brazil	Licensed	Licensed	
Brunei Darussalam			
Bulgaria			
Burkina Faso			
Burundi			
Cameroon		Licensed	
Canada	Licensed	Licensed	
Central African Rep.		Licensed	
Chad			
Chile		Licensed	
Colombia	Licensed	Licensed	
Congo		Licensed	
Costa Rica		Licensed	
Cote d'Ivoire		Licensed	
Cuba			
Cyprus			
Czech Republic	Testing License (3 years)	Licensed	Close to Testing License
Democratic Republic of the Congo			
Denmark		Licensed	
Djibouti			
Dominica			
Dominican Rep.		Licensed	
Ecuador		Licensed	
Egypt			
El Salvador		Licensed	
Estonia			
Fiji	Licensed		
Finland		Licensed	
France		Licensed	
Gabon			
Gambia			
Germany		Licensed	
Ghana		Licensed	

\* This information was obtained from official administration and company data presented as part of the 1999 ITU-D GMPCS Regional Workshops and Company Press Releases.



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## Satellite Service Provider Market Access in WTO Members

Country	Iridium	Orbcomm	GlobalStar
	Licensed*	Licensed*	Licensed*
Greece			
Grenada			
Guatemala	Licensed	Licensed	
Guinea		Licensed	
Guinea Bissau			
Guyana		Licensed	
Haiti		Licensed	
Honduras		Licensed	
Hong Kong (SAR)			
Hungary			
Iceland		Licensed	
India	Licensed		
Indonesia			
Ireland		Expected authorization	
Israel			
Italy	Experimental	Licensed	
Jamaica		Licensed	
Japan	Experimental	Licensed	
Kenya		Licensed	
Korea, Rep. of	Licensed	Expected authorization	Licensed
Kuwait			
Kyrgyz Republic	Licensed		Licensed
Latvia			
Lesotho			
Liechtenstein			
Luxembourg			
Macau			
Madagascar		Licensed	
Malawi		Licensed	
Malaysia	Licensed	Licensed	
Maldives	Partial License		
Mali		Licensed	
Malta			
Mauritania			
Mauritius			
Mexico		Licensed	
Mongolia	Licensed		
Morocco		Licensed	
Mozambique		Licensed	
Myanmar			
Namibia		Licensed	
Netherlands			
New Zealand	Licensed		
Nicaragua		Licensed	
Niger		Licensed	
Nigeria			

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## Satellite Service Provider Market Access in WTO Members

Country	Iridium	Orbcomm	GlobalStar
	Licensed*	Licensed*	Licensed*
Norway		Licensed	
Pakistan	Licensed		Licensed
Panama		Licensed	
Papua New Guinea	Licensed		
Paraguay		Licensed	
Peru		Licensed	
Philippines	Licensed	Licensed	
Poland			
Portugal			
Qatar			
Reunion			
Romania		Licensed	
Rwanda		Licensed	
Saint Kitts & Nevis			
Saint Lucia			
Saint Vincent & the Grenadines			
Senegal	Licensed	Licensed	
Sierra Leone			
Singapore	Licensed		
Slovak Republic			
Slovenia			
Solomon Islands			
South Africa		Licensed	
Spain		Expected authorization	
Sri Lanka	Licensed		
Suriname		Licensed	
Swaziland		Licensed	
Sweden		Licensed	
Switzerland	Licensed	Licensed	By the end of 1999
Tanzania		Licensed	
Thailand	Licensed	Licensed	Licensed
Togo		Licensed	
Trinidad & Tobago		Licensed	
Tunisia			
Turkey	Licensed		Licensed
Uganda		Licensed	
United Arab Emirates			
United Kingdom	Experimental	Licensed	
United States	Licensed	Licensed	
Uruguay		Licensed	
Venezuela	Licensed	Licensed	
Zambia		Licensed	
Zimbabwe		Licensed	

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